CHEMISTS
ENGINEERS

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THILMANY, LLC
No. 9&11 Boilers Emission Test
at

Kaukauna, WI
May 27, 2010
P.O. No. 91382 OS

Prepared by:

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June 28, 2010

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Thilmany, LLC - No. 9&11 Boilers Emission Tests

I. Introduction and Summary

Badger Laboratories & Engineering Co., Inc. (BL&E) was retained by Thilmany, LLC to determine the concentration of Particulate emissions in the exhaust from the No. nine and eleven boilers located at the plant in Kaukauna, WI. A set of multiclones and an electrostatic precipitator are used for emission control on the boilers.

The emission tests were conducted May 27, 2010 by Bruce Lamers and Matt Vissers of BL&E (phone No. 920-729-1100). The testing was performed to demonstrate compliance with the Wisconsin Department of Natural Resources (WDNR) particulate emission limitations of 0.30 pounds per million Btu. Mr. James Crawford and Ms. Michelle Farley, from the WDNR, were present to witness the testing on May 27, 2010. Testing was performed following U.S. EPA Methods. Mr. Tom Jayne (phone No. 920-766-8656) is the Thilmany, LLC facility contact. Summaries of the emission results are shown below. A more detailed breakdown of the results is shown in the Appendix.

No. 9/11 Boiler Emission Results

05/27/10

Test Run	Volumetric Flow Rate dscfm	Isokinetic Ratio, %	Particulate Emission lb./hr.	Particulate Emission **lb./MM Btu**
1	125,758	100.4	48.07	**0.090**
2	132,005	98.8	40.73	**0.076**
3	129,365	98.5	32.52	**0.061**
Average of 3 Runs	**129,043**		**40.44**	**0.08**
Sootblowing Emission Calculation				**0.07***
Limitation				**0.30**

* **0.07** =0.090*((0.883+0.117)*4.35/21.192)+0.0685*((24-4.35)/24-(0.509/21.192))
Sootblowing occurred during run number one for a total of 52 minutes between the two boilers. There is a total of 261 minutes or 4.35 hours of Sootblowing per day. Calculation based on NR 439.07(8)(b)

Thilmany Papers- Kaukauna Mill No. 9 Boiler PM Emission Test-- May 27, 2010

Nos. 9 and 11 Boilers Process and ESP Data

PM Stack Test Run Times		9 Boiler		11 Boiler				1st Field Electrical Readings						2nd Field Electrical Readings						
Start	End	p09-fl 9342 9 boiler steam flow, MLBS/HR	p09-pdt 9050 9 boiler multiclone dP, in W C	b11-fl 1342 11 boiler steam flow, MLBS /HR	b11-pdt 1050 11 boiler multiclone dP in W C	Combined steam flow, MLBS/HR	% Full Load	UPR-ET 3 TR 1 Pri Volts	UPR-ET 3 TR 1 Sec Volts	UPR-IT 387 TR 1 Pri Current, Amps	UPR-IT 38 TR 1 Sec Current Amps	UPR-JT 3 TR 1 Pri kW	UPR-YT 3872 TR 1 Spark Rate	UPR-ET 38 TR 2 Pri Volts	UPR-ET 3 TR 2 Sec Volts	UPR-IT 3 TR 2 Pri Current Amps	UPR-IT 38 TR 2 Sec Current Amps	UPR-JT 3 TR 2 Pri kW	UPR-YT 3892 TR 2 Spark Rate	UC-AT 3890 Stack Opacity %
5/27/2010 8:45	5/27/2010 9:52	142.0	2.1	331.0	3.2	473.0	93.7%	213.4	32.8	80.1	0.408	15.5	62.3	241.5	37.1	124.7	0.659	27.8	56.9	3.77
5/27/2010 10:20	5/27/2010 11:27	142.8	1.9	347.7	3.3	490.6	97.1%	229.9	34.8	86.4	0.443	18.0	63.1	263.2	39.1	138.3	0.737	33.1	41.5	2.69
5/27/2010 11:50	5/27/2010 12:58	153.3	2.2	332.7	3.2	486.0	96.2%	237.8	35.5	94.3	0.493	20.2	62.9	270.6	39.7	145.3	0.783	35.5	33.4	2.99
	AVERAGE	146.1	2.1	337.1	3.3	483.2	95.7%	227.0	34.4	86.9	0.45	17.9	62.8	258.4	38.6	136.1	0.73	32.1	44.0	3.15

Sootblowing occurred on Run 1

9 Boiler Sootblow:	9:05AM-9:23 AM	17 min/blow x 3 blows/day = 51 min/day
11 Boiler Sootblow:	8:58AM-9:33 AM	35 min/blow x 6 blows/day = 210 min/day